

Supporting Renewable Energy Through Green Energy Certificates

**DER at Federal Facilities Workshop
Chicago, IL**

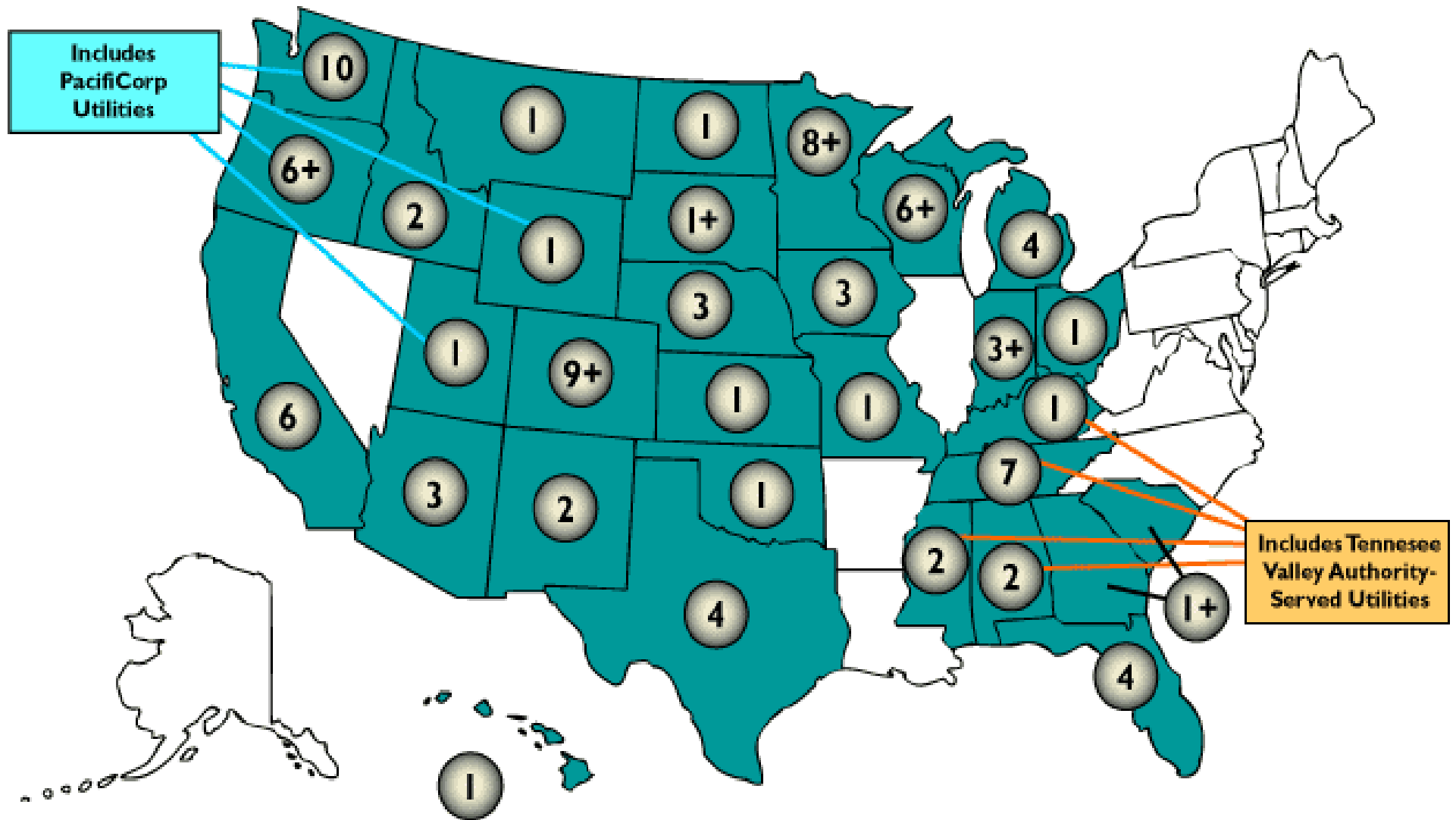
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Markets for Green Power

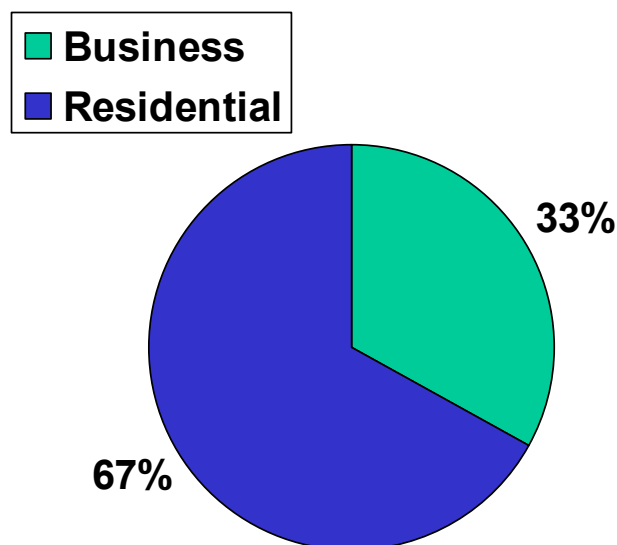
- **Regulated markets** – green pricing programs
- **Competitive markets** – green marketing
- **Certificate-based products** – only the renewable attributes are sold
 - Available to all customers
 - Customers do not have to switch suppliers

Utility Green Pricing Activities



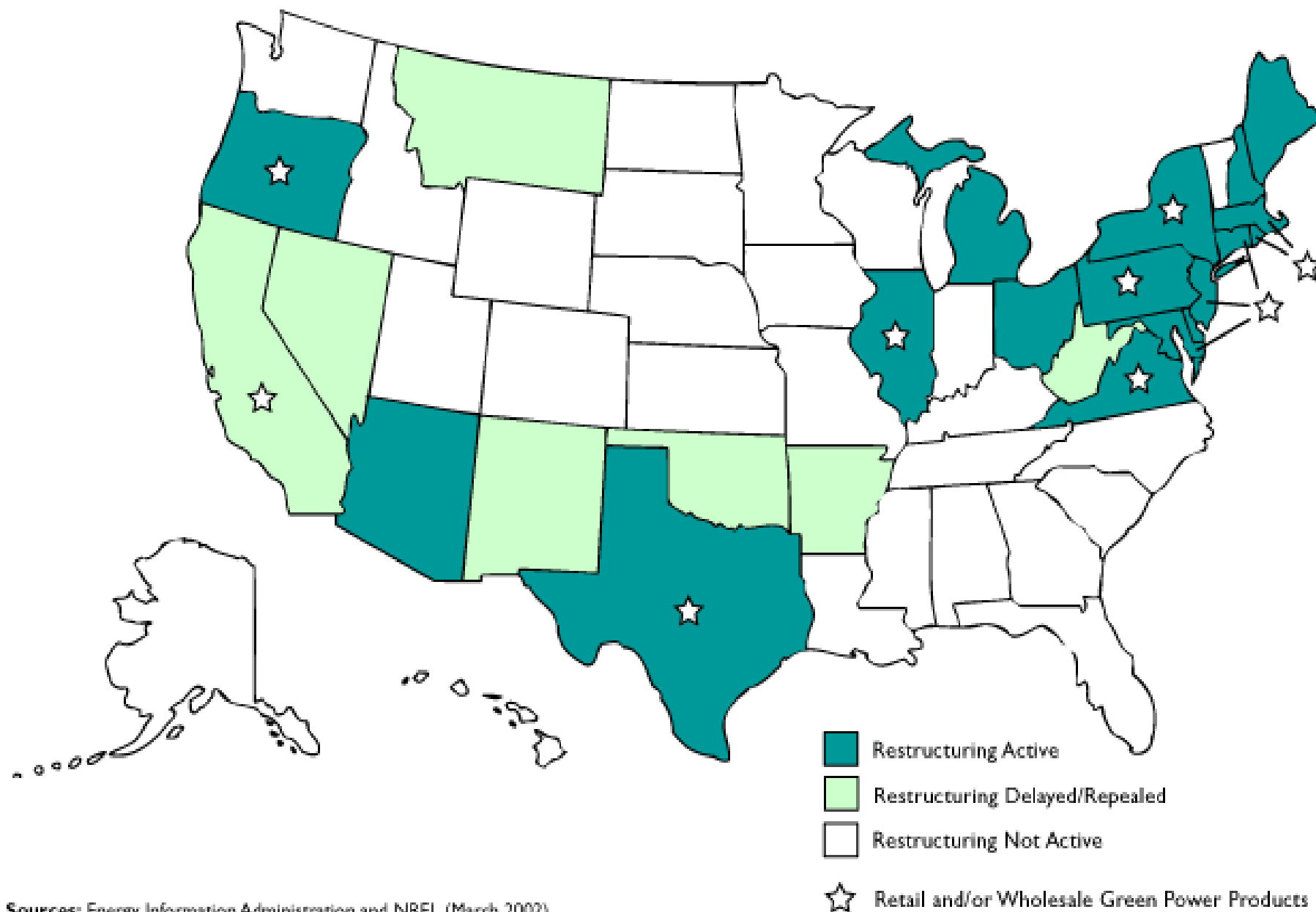
- Utility green pricing programs exist or are being developed
- # Number of utilities offering programs
" + " signifies multiple distribution cooperatives served by the same G&T cooperative.

Utility Green Power Customers and Renewable Energy Sales



- More than 210,000 customers participate in utility programs
- Average sales ~11 million kWh per year
- About 1/3 of sales are to non-residential customers
- Marketing emphasis on residential customers
- Median price premium 2.5¢/kWh

States with Competitive Green Power Offerings



Sources: Energy Information Administration and NREL (March 2002)

Green Power in Competitive Electric Markets

- ~150,000 customers buy green power in competitive markets
- Another 400,000 buy products with 1-2% renewable energy content
- Recent emphasis on:
 - partnering among marketers and utilities
 - sales to large, non-residential customers

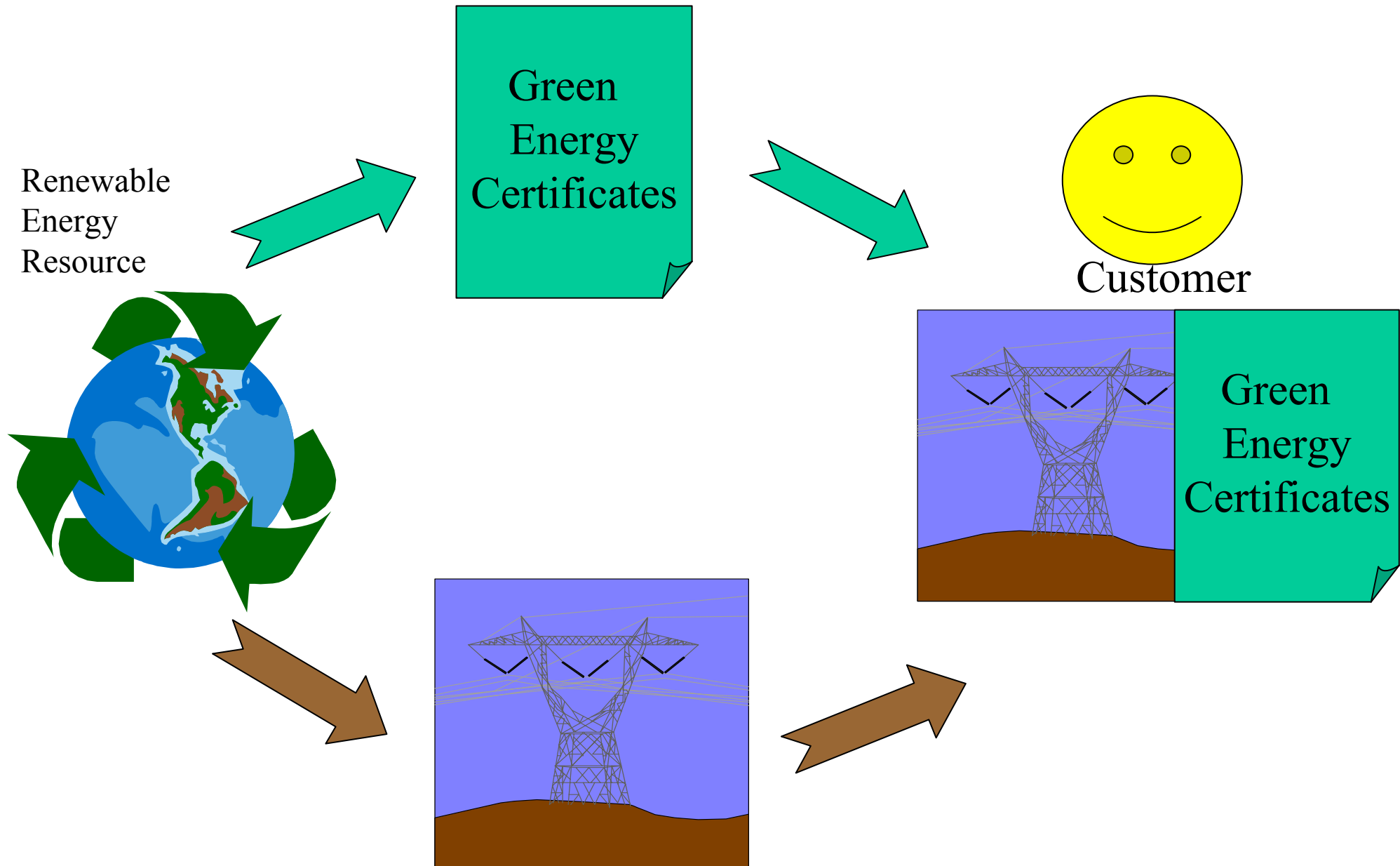
Emerging Market: Green Energy Certificates

- Green certificates represent the **environmental attributes** of renewable electricity. Can be sold separately from commodity electricity.
- Other names:
 - tradable renewable energy certificates (TRCs)
 - green tags
 - renewable energy certificates (RECs)
- Examples of certificate marketers:
 - Bonneville Environmental Foundation, Community Energy, Sterling Planet, Sun Power Electric, ComEd (wholesale only)

How Certificates Work

- Certificates differentiate the electricity produced by a renewable energy facility by “unbundling” the environmental benefits from the energy
- The energy is delivered to the grid as it is produced
- The certificate represents the environmental benefits
- The energy is used in real time, but the certificates can be “stored” for later sale
- RES buys certificate and connects it to commodity power to “assemble” green power for retail customer
- Retail customer specifies % green they want in their electricity mix
- Customer buys the rights to green marketing claims

How Certificates Work (cont.)



Purchasing Green Energy Certificates from ComEd

- Sold only at wholesale to Retail Electric Suppliers, utilities, marketers
- EcoPower Certificates represent the environmental benefit of the renewable resource, separate from the energy
- ComEd has marketing agreement with Environmental Resources Trust (ERT) to use their EcoPower label
- Current renewable resource base is landfill gas-to-energy and wind.

EcoPower Value to Customer

- Automated Power Exchange provides independent tracking function of sales (avoid double selling)
- Includes a Net Environmental Benefit Statement quantifying the benefit of the renewable resource relative to system power
- Percentage of sales premium directed to Reinvestment Fund for renewable energy development
- Customer can use EcoPower label free of charge



EcoPower™ Certificates from ComEd

The City of Chicago

This certifies that

Is the owner of

60,000 Megawatt hours of EcoPower™ Annually

Renewable Energy

Energy Resource(s):



MegaWatt Hours
Certificate

ComEd
An Exelon Company

THE CITY OF CHICAGO
John R. ...
...

Selling Green Energy Certificates

- “Unbundle” DER electricity production from the environmental benefits
- Use DER generation to meet local load
- Sell green energy certificates separately
- To avoid double counting, DER owner loses right to make green marketing claims
- Energy output, which determines quantity of green energy certificates, has to be metered
- In this emerging market, challenging for small DER owners to find green energy certificate buyers. Aggregation?
- Possible buyers: local utility, ERT, Sterling Planet, Bonneville Environmental Foundation.

Green Energy Certificate Resources

- The *Green Power Network* provides news and information on green power markets, utility green pricing programs, links to green power providers and product offerings, and much more! **<http://www.eren.doe.gov/greenpower>**
- ComEd
 - Mark Jantze, Energy Acquisitions Group, 312-394-5665
 - Gabriela Martin, Environm. Strat. Group, 312-394-2354